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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/098,522	03/18/2002	Takashi Yanagisawa	112306	6245

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EXAMINER

LISH, PETER J

ART UNIT PAPER NUMBER

1754

DATE MAILED: 02/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/098,522

Applicant(s)

YANAGISAWA ET AL.

Examiner

Peter J Lish

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to: See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Art Unit: 1754

DETAILED ACTION

Applicant's arguments, filed 10/22/03, have been fully considered and are persuasive. Specifically, the Declaration filed in copending case 10/098,103 is viewed to overcome the rejections using reference to Geus et al. The rejections of the previous office action using reference to Geus et al. have been withdrawn.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Double Patenting

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 1-7 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-7 of copending Application No. 10/098,379. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Claims 1-7 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-7 of copending Application No. 10/098,103. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Art Unit: 1754

Applicant's arguments filed 10/22/03 have been fully considered but they are not persuasive. It is the position of the examiner that the intended use of the material does not limit the material itself. Therefore, "an electrode material for a lithium secondary battery comprising a carbon fiber..." is viewed to be equivalent to "a carbon fiber..."

Claim Rejections - 35 USC § 102/103

Claims 1-2, 4-8, and 10-11 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nolan et al. (US 5,780,101) alone or with reference to Endo et al. ("Structural characterization of cup-stacked-type nanofibers...") to show a state of fact.

Nolan et al. teaches vapor grown carbon filaments, as seen in figures 1 and 2. Nolan teaches, regarding these carbon filaments, that "the feature common to all such filaments is that the carbon cones or frustra are stacked. The graphite basal planes are not parallel to the axis of the filament, so there must be exposed carbon lattice edges at the outer circumference of each carbon layer in a filament." It is seen that the carbon layers have a large ring at the top end and a small ring at the bottom end in the axial direction, as well as a hollow core, or canal (Figure 2).

It is not explicitly taught that carbon layers are exposed in at least a portion of the small ring ends. It is expected that the fiber of Nolan meet this limitation because the bottom cone of Nolan (furthest away from the catalyst tip) is expected to have its little ring end exposed.

Regarding claims 6-7, Nolan et al. does not explicitly teach that the large ring ends and small ring ends have minute irregularities at the level of atoms. This is expected because it is very common for carbon nanofiber or nanotube layers to have irregularities and additionally

Art Unit: 1754

because no difference is seen between the nanofibers of Nolan et al. and those of the instantly claimed invention. Furthermore, Endo et al. teach a vapor grown, stacked cone, graphitic nanofiber. Endo et al. teach that there are disordered wavy regions, or irregularities, along the fiber's axis, possible due to the relaxation of carbon layers as a result of cooling. It is thus expected that the vapor grown nanofibers of Nolan et al. inherently contain these irregularities, as they too are vapor grown and cooled.

Regarding claim 5, Nolan et al. does not explicitly teach that the carbon nanofibers have an outer surface area with at least 2% being made up of edges of the hexagonal carbon layers. It is expected that the nanofibers of Nolan et al. will have this property, however, as the nanofibers have exposed large ring edges and because no difference is seen between the nanofibers of Nolan et al. and those of the instantly claimed invention.

Regarding claims 10-11, no difference is seen between the carbon nanofibers of Nolan et al. and the electrode material of the instantly claimed invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nolan as applied above, taken with Geus et al. (EP 198,558 A2)

Art Unit: 1754

Nolan et al. does not explicitly teach that at least a part of the deposited film formed during vapor growth is removed.

Geus teaches the treatment of carbon filaments wherein the metal particles, as well as any substrate or film materials, may be removed by acid treatment, thereby exposing the carbon layers of both the large ring edges and the small ring edges. It would have been obvious to one of ordinary skill at the time of invention to perform the treatment of Geus et al. on the carbon filaments of Nolan et al. in order to purify the material.

Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nolan et al. as applied above, and further in view of Ikeda et al. (WO 95/07551).

Nolan et al. do not explicitly teach the use of the carbon filaments for the anode or cathode electrode material of a lithium secondary battery.

Ikeda et al. teaches a lithium secondary battery with electrodes containing carbon fibrils, or filaments, as both the anode material and the cathode material. It would have been obvious to one of ordinary skill at the time of invention to use the carbon filaments of Nolan et al. in the process of forming a lithium battery, as taught by Ikeda et al., in order to take advantage of the mechanical and electrical properties of the filaments of Nolan et al.

Regarding claim 9, it is inherent in the use of a lithium battery containing the carbon nanotubes of Nolan et al. that electrolyte is introduced and held in the hollow core.

Claim 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nolan et al. taken with Geus et al. as applied above, and further in view of Ikeda et al. (WO 95/07551).

Art Unit: 1754

Nolan et al. do not explicitly teach the use of the carbon filaments for the anode or cathode electrode material of a lithium secondary battery.

Ikeda et al. teaches a lithium secondary battery with electrodes containing carbon fibrils, or filaments, as both the anode material and the cathode material. It would have been obvious to one of ordinary skill at the time of invention to use the carbon filaments of Nolan et al. in the process of forming a lithium battery, as taught by Ikeda et al., in order to take advantage of the mechanical and electrical properties of the filaments of Nolan et al.

It is inherent in the use of a lithium battery containing the carbon nanotubes of Nolan et al., treated by the process of Geus et al., that electrolyte is introduced and held in the hollow core.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Lish whose telephone number is 571-272-1354. The examiner can normally be reached on 9:00-6:00 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



PL

STUART L. HENDRICKSON
PRIMARY EXAMINER